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CHEMISTRY.

No. I.

IMPROVED METHOD OF BLEACHING PALM-OIL.

The Sum of SEVEN POUNDS *was presented to* MR. CHARLES CAMERON, *No.* 50 *Gascoyne Street, Liverpool, for his Method of Bleaching Palm-Oil.*

50 *Gascoyne Street, Liverpool,*
April 19, 1841.

SIR,

PLEASE to favour me by laying the following communication before the Society, for their consideration.

I am, Sir, &c. &c.

W. A. GRAHAM, Esq.

CHARLES CAMERON,
Chemist.

About six years ago a process for discharging the colouring matter of palm-oil was introduced into the soap-manufactories here, which was as follows: Into a strong cast-iron pan (built in the usual way, with a furnace below it) the manufacturers put two, three, or more tons of oil, according to its capacity; they then, by means of the fire below, increased the temperature of the oil to 450°; the result was, that the colouring matter was completely destroyed. But after working on it in the most careful manner, they were at last obliged to abandon it, for the following reasons:—

1st. By the time that the whole body of the oil was raised to 450°, the bottom of the boiler was heated to above 600°, and, consequently, the portion of oil in contact was decomposed, and, being converted into gas, frequently caused explosions to take place.

2d. The effluvium from the decomposed portion was insufferable.

3d. If not immediately run off, on the colour being discharged, they frequently procured a black colour from the charred oil being mixed with the other.

The process was cheap, but from these reasons, and the danger attending it, they were obliged to relinquish it.

I have stated the above that you may the better understand the improvement I have effected in the process.

About four months ago I was induced to make some experiments to ascertain at what point of temperature the colouring matter began to give way, when I satisfactorily found that it began to change at 230°, and on continuing the process to within 2° or 3°, more or less, of that temperature, with *continued agitation*, it gradually lost its colour, and at last became as white as home-made tallow, and of a hardness superior to any imported. I then fully established the fact, that a low temperature (230° instead of 450°), length of time, and agitation (agitation was not employed in the old process), removed all the difficulties that prevented its former success.

The process which I recommend, and which is now acted upon here, may be thus described: A cast-iron pot is provided, containing from three to four tons of oil, with the ordinary furnace below it, and a horizontal revolving fan of sheet-iron placed within it, for agitation, power being obtained from a steam-engine with a speed of six revolutions per minute. In the absence of an engine, a wooden rake may be employed. The oil is then, by means of the fire, raised to a temperature of 230°; the fire is then withdrawn from below, and high-pressure *steam* is introduced from a boiler (15lbs. pressure on the square inch of the valve), by means of leaden pipes, two or more (according to the size of the boiler), of two inches diameter. By this means an equable temperature of 230° is obtained, without any danger of decomposing the oil, and the process is continued until the colour is completely gone. A vessel containing four tons will require ten hours to complete the process, at an expense of only 2 or 3 cwt. of slack to each ton of oil.

It appears to me that the colouring matter is discharged by the absorption of oxygen from the atmosphere, as oil at a high temperature is known to have a strong affinity for oxygen at a high temperature, and hence agitation is essential, so as continually to present a new surface.

I inadvertently made it known, and although it is of great importance to the trade, I shall derive no benefit from it.

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50 *Gascoyne Street, Liverpool.*
May 13*th*, 1841.

SIR,

I RECEIVED yours of the 10th inst., in which you observe that "the principal cause of the postponement was the absence of evidence of the efficacy of the process," and requesting the names and address of persons having adopted it on a large scale, that you might write to them, &c. With regard to scale, it has been applied to from two to four tons at a time, according to the extent of establishment. But the Committee must be little acquainted with the soap-boilers if they suppose that they will get evidence from them. On receipt of your letter yesterday, I called on one house, G. and J. Blake, the first to whom I had communicated it, and merely mentioned that I proposed to communicate it to the Society, and stated that, as I might probably receive a premium, I should like to have a favourable report from them, to which they objected, and considered such request as unreasonable, having paid me 5*l.* Whatever improvement they made on their manufacture they considered as capital, so long as they could retain it to themselves, and would rather pay me any premium the Society might award than be a *party* to a publication of it in the Journal of the Society, from which it could be copied into the newspapers and other journals, and laid open gratuitously to the whole trade of London, Bristol, &c., and consequently render it of little value to them. I could make no reply. The Committee must judge for themselves. The soap-boilers here have been discharging the colour from their palm-oil on a patent process from a Mr. Watt, by means of chromic acid, produced from hydro-chloric acid and chromate of iron, the expense of which is about 1*l.* 5*s.* per ton of oil, freed from colour. My improvement costs only a few cwt. of coal-slack. I therefore consider that the gentlemen were fully justified in their observations, especially if it will effect a saving of three or four hundred pounds a-year. I declined calling on any other persons, convinced that I should only receive the same, if not more, uncivil treatment.

I am, Sir, &c. &c.
CHARLES CAMERON.

W. A. GRAHAM, Esq.
Secretary, &c. &c.

50 Gascoyne Street, Liverpool,
December 1, 1841.

SIR,

I DULY received yours of yesterday, and regret to state that the same objections as to certificates from proper persons, which I mentioned in a former letter, still exist, except in the case of Mr. Richard Vaughan, soap-boiler, of Earle Street, who has promised me that if you should write to him he will give you his opinion.

If any gentleman of the Committee will take the trouble, I would suggest the following process for his government in coming to a decision as to the correctness of the principle of my communication. Take a small cast-iron saucepan (say a quart), and put into it a pound or pound and a half of palm-oil, place it on a gentle fire, and when it has reached 212°, commence agitating it, either with a metal spoon or piece of wood. If it is kept at a range between 212° and 220° for some time (say an hour), there will be a considerable change of colour. Raise the oil to between 230° and 240°, the colour of the oil will disappear more rapidly. The pan will require occasionally to be taken off the fire to prevent too high a temperature, which would char it.

What I claim as my improvement is agitation, and the low temperature, which prevents injuring the quality of the oil. The process is not so complete in a small as in a large quantity; and high-pressure steam is far preferable to actual fire for regulating the temperature.

As Professor Grahame is a townsman of mine, probably at your request he might be induced to allow, under his superintendence, one of his pupils to perform the experiment, and report the result to the Committee. I am anxious to satisfy the Committee, but circumstances over which I have no control prevent me from giving any further proofs of its efficiency.

I am, Sir, &c. &c.
CHARLES CAMERON.

W. A. GRAHAM, Esq.
Secretary, &c. &c.

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50 Gascoyne Street, Liverpool.
February 7th, 1842.

SIR,

ENCLOSED you will find two certificates of my improved process of discharging the colour of palm-oil. In a former letter I stated to you that I had applied to G. and J. Blake for a certificate, and, at the same time, stated their reasons for declining to do so. These reasons now no longer exist. About two months ago they had occasion to discharge their foreman, who proceeded to Newcastle and Hull, and fitted up apparatus exactly the same, inch for inch, as that which I fitted up for them. They now, in justice to me as the first inventor, have granted the enclosed.

Both the firms whose certificates I enclose are the oldest and most extensive in town, and their saving of expense (compared with any other process) will amount to 700*l.* or 800*l.* per annum, independent of producing a superior colour. Had I secured it by patent I might have made 2000*l.* to 3000*l.* by it. My process discolours a ton of oil here at 2*s.* per ton. Watt's process (formerly acted on) cost 20*s.* per ton.

I have the authority of the two firms I have given you to say that, if you think proper to write to them, they will satisfy you in any inquiry you may make.

You may form some idea of the description of characters I have to deal with, when I tell you that four of the manufacturers here have adopted my plan without the slightest acknowledgment to me. It cannot be kept a secret; I have no legal redress; and therefore must submit to a robbery of my property. With this you will receive a specimen of the oil.

I am, Sir, &c. &c.

W. A. Graham, Esq. CHARLES CAMERON.
Secretary, &c. &c.

P.S. Please let me know the decision of the Committee as early as possible.—C. C.

WE have adopted Mr. Cameron's method of discharging the colour from palm-oil, and are satisfied with the result.

GEO. AND J. BLAKE.

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3 *Earle Street, Liverpool,*
Dec. 7, 1841.

GENTLEMEN,

I FIND Mr. Charles Cameron's method of discharging the colour of palm-oil perfectly efficient. It is simple, attended with little expense, and far preferable to discharging with acids, as the quality of the oil is not injured, and where the oil is used for the purpose of soap-making there is no alkali destroyed thereby.

I am, Gentlemen, &c. &c.

To the Committee of Chemistry, RICHD. VAUGHAN.
Society of Arts.

Liverpool, Feb. 5, 1842.

I HAVE seen Mr. Cameron's method of discharging the colour of palm-oil, which I think a very good one.

WM. LUND.